Snowmobile Mechanic Dies When He is Ejected from Snowmobile Operator's Seat and Strikes a Tree

SUMMARY: A 25-year-old male snowmobile mechanic (the victim) for a snowmobile sales and service company died when he was ejected from the operator's seat and struck a tree. The victim was testing the machine by operating it on a public snowmobile trail, when he apparently hit a snowbank and flew off the seat. He skidded along the trail for almost 100 feet until he hit a tree along the trail's edge. A snowmobiler found the victim next to the tree, and summoned emergency services. The EMS and police responded. The victim was transported by ambulance to the hospital, where he was pronounced dead. The FACE investigator concluded that, to prevent similar occurrences, employers that use snowmobiles in their business should:

- **consult with snowmobile manufacturers to determine safe and effective in-shop methods to test snowmobile operations.**
- **develop, implement and enforce a policy for snowmobile operators to run at least one test lap on a trail at a low speed before testing the machine at a higher speed.**
- **develop, implement and enforce a policy to observe speed limits for operating snowmobiles during test drives.**
- **evaluate trails for hazards and eliminate the hazards before running a vehicle on the trail.**

INTRODUCTION:

On February 21, 2001, a 25-year-old male mechanic for a snowmobile sales and service company died when he was thrown off a snowmobile and skidded into a tree. The Wisconsin FACE field investigator learned of the incident on April 10, 2001. The FACE investigator reviewed the death certificate and the coroner and State Department of Natural Resources reports. On August 30, 2001 the investigator conducted a site visit and interviewed the employer and police.

This incident occurred on a public snowmobile trail that runs through the city where the employer's shop is located. The employer in this incident was a recreational vehicle shop that sold and repaired motorcycles, all-terrain vehicles and snowmobiles as well as supplies and equipment for these vehicles. The company had been in business for about 25 years prior to the incident, and employed eight workers. The company's safety program was a combination of written and unwritten policies and procedures. Safety training was provided to employees through on-the-job training, demonstration, and by manufacturer's representatives. The company conducted employee safety meetings on a periodic basis. This was the company's first occupational fatality.

The victim had worked at the company intermittently since he was in high school, but had been steadily employed at the company as a mechanic for over a year before the incident. For about a year prior to his permanent employment at the company, he had worked out-of-state for a company where he drove and raced motorcycles as part of his job duties. The victim had been an

officer in a local snowmobile club and frequently volunteered to groom and maintain snowmobile trails in the area. He had completed a snowmobile safety course, and was a snowmobile safety instructor.

INVESTIGATION:

The snowmobile sales and service shop was located in a building on the outskirts of a city, with direct access to a public snowmobile trail. New recreational vehicles and supplies are on display in the front portion of the building, while the service shop is located in the back.

On the day of the incident, the victim was working on a 3-year-old, 700 cc. engine snowmobile. It had been purchased by the shop from an individual as a trade-in, and the victim performed routine maintenance to prepare it for re-sale. The machine had no known mechanical problems. Part of the shop's normal work practice before selling a used snowmobile was to take it for a trail drive to check out all controls. The snowmobile trail runs on an old railroad grade in a north-south direction through the city, and continues outside the city limits as part of a network of public and private trails in the state. The trail network is intended for recreational use, and is also used by snowmobile dealers to demonstrate and test new and repaired vehicles. County agencies are eligible for state funding that can be used for capital costs to develop and maintain the trails. The labor needed to build and maintain the trails is provided by volunteers, primarily by members of local snowmobile clubs scattered around the state. Volunteer members of the local snowmobile clubs groom the trails to maintain passable tracks, and mark and remove trail hazards.

Shop policy for the trail ride included starting out at a slow rate of speed on the trail, proceeding south of the shop for several miles while checking machine operations like speed control, braking, cornering, suspension, and gauges. During this portion of the test drive, the operator was also expected to examine the trail for hazards. Then, the operator would turn the snowmobile around and drive north back to the shop at a higher rate of speed to test the peak performance of the machine. A combination of the operator's judgement and the machine's capacity determined the rate of speed for the return trip.

Around 1:30 PM, the victim finished the maintenance tasks for the snowmobile, and drove it to the trail for the test drive. He traveled south over one mile at an unknown speed. Within the next mile, he was traveling at a high rate of speed when he struck a snow drift on the trail. The drift was located in a windswept area near an opening in a line of trees that bordered the trail. When he struck the drift, the snowmobile became airborne for approximately 60 feet before striking the trail. This caused the victim to be ejected from the machine. Impressions in the snow-covered trail revealed he bounced several times for almost 100 feet before striking a tree with his head. The snowmobile continued down the trail rolling over for approximately another 140 feet (Figure 2). It is estimated that the vehicle was traveling at about 70 miles per hour when it struck the snowdrift. A snowmobiler found the victim against the tree, with his helmet nearby in the trail, and summoned emergency services. The EMS and police responded. The victim was transported by ambulance to the hospital, where he was pronounced dead.

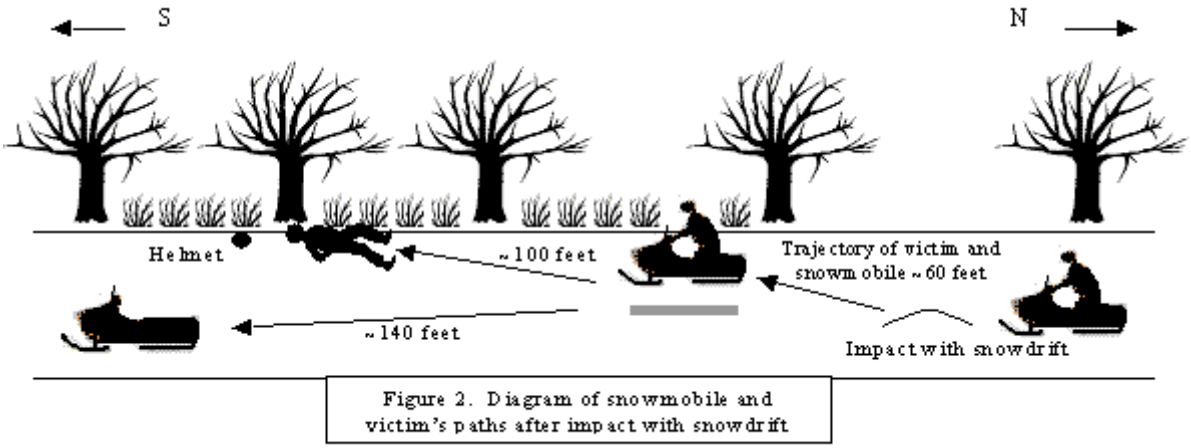

Figure 2. Diagram of snowmobile and victim's paths after impact with snowdrift

CAUSE OF DEATH: The official cause of death was massive head and chest trauma.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers who use snowmobiles in their business should consult with snowmobile manufacturers to determine safe and effective in-shop methods to test snowmobile operations.

Discussion: Testing snowmobiles on outdoor, open tracks can expose workers to environmental hazards that would not be present in an enclosed shop. Snowmobile manufacturers publish specifications for performance characteristics of new and used vehicles that can be checked within a shop environment. When the manufacturer's manual does not provide clear or adequate instructions to test the desired functions, sales and service companies should check with the manufacturer for additional methods that can be used without moving the vehicle to a test track.

Recommendation #2: Employers that use snowmobiles in their business should develop, implement and enforce a policy for snowmobile operators to run at least one test lap on a trail at a low speed before testing the machine at a higher speed.

Discussion: When it is necessary to test a snowmobile on a trail, the operator should take at least one trip on the trail at a speed that is slow enough to check for hazards, and to ensure the machine is in safe operating condition. Employers should meet with their mechanics and other test drivers to give explicit instructions, training and disciplinary actions, if necessary, to ensure they understand and observe the company's policies regarding test drives.

Recommendation #3: Employers that use snowmobiles in their business should develop, implement and enforce a policy for snowmobile operators to observe speed limits for operating snowmobiles during test drives.

Discussion: Employers should establish speed limits for employees who must operate snowmobiles in the course of their work. Guidelines to use in establishing the limits include:

- do not operate the vehicle at a speed that exceeds the manufacturer's recommendations
- ride at a reasonable and prudent speed in which the operator can stop within the line of sight
- do not exceed the state's speed limit, if applicable

Note: States have a wide range of laws and rules for controlling the speed of snowmobiles. Most states, including the state where the incident occurred, do not have speed limits for off-road trails.

Recommendation #4: Employers that use snowmobiles in their business should evaluate trails for hazards on a regular basis and eliminate the hazards.

Discussion: Employers should ensure that trails are free of major hazards at the beginning of each snowmobile season, and after each snowfall that is heavy enough to significantly alter trail conditions. In this case, a snowdrift was apparently created when wind blew snow through an opening in the trees along the trail. Either the victim didn't see the snowdrift that caused his vehicle to become airborne, or he under-estimated it's size and density. If the trail had been evaluated prior to the victim's test drive, the snowdrift might have been removed from the vehicle's pathway or he would have know to go over it more slowly.